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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/672,691	09/26/2003	Kojiro Okada	SANA:002	9262

7590 09/07/2004

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EXAMINER

TRAN, BINH Q

ART UNIT	PAPER NUMBER
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3748

DATE MAILED: 09/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/672,691

Applicant(s)

OKADA ET AL.

Examiner

BINH Q. TRAN

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 9, 11, 13, 15 and 17-19 is/are rejected.
- 7) ☒ Claim(s) 7, 8, 10, 12, 14 and 16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 09/03/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

***Claims 1-2, 5-6, 9, 11, 13, 15, and 17-18 are rejected under 35 U.S.C. 102 (b) as being anticipated by Tayama et al. (Tayama) (Patent Number 6,477,833).***

Regarding claims 1, and 17-18, Tayama discloses a catalyst deterioration detecting apparatus, comprising: a catalyst (e.g. 12, 13), disposed in a path of exhaust gas emitted from the engine (2), including ceria serving as an oxygen storage agent (e.g. See col. 4, lines 32-53; col. 14, lines 1-12); catalyst temperature sensing means for obtaining temperature of said catalyst (e.g. See Fig. 9; col. 14, lines 40-58); and deterioration detecting means for detecting a degree of deterioration of said catalyst if the temperature is obtained by said catalyst temperature sensing means is equal to or higher than an activation temperature at which said catalyst is activated and

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is in a particular temperature range causing NO<sub>x</sub> conversion efficiency of said catalyst to decrease (e.g. See col. 5, lines 35-67; col. 6, lines 1-67; col. 14, lines 40-58).

Regarding claim 2, Tayama further discloses that the particular temperature range causes the ceria to transform (e.g. See col. 5, lines 35-67; col. 6, lines 1-67; col. 14, lines 40-58).

Regarding claim 5, Tayama further discloses that the catalyst temperature sensing means estimates the temperature of said catalyst on the basis of a running state of the engine (e.g. See Fig. 9; col. 14, lines 40-58).

Regarding claim 6, Tayama further discloses that the discloses catalyst temperature sensing means estimates the temperature of said catalyst on the basis of temperature of the exhaust gas that is to be supplied to said catalyst (e.g. See Fig. 9; col. 14, lines 40-58).

Regarding claim 9, Tayama further discloses that the deterioration detecting means includes an upstream oxygen sensor and a downstream oxygen sensor (e.g. 6, 60, 61), respectively disposed upstream and downstream of said catalyst, each of which is for sensing concentration of oxygen included in the exhaust gas as an oxygen signal; and said deterioration detecting means detects the degree of deterioration by comparing the oxygen signals, respectively received from said upstream and said downstream oxygen sensors when the temperature sensed by said catalyst temperature sensing means is in the particular temperature range (e.g. See Fig. 9; col. 14, lines 40-58).

Regarding claim 11, Tayama further discloses that the deterioration detecting means includes an oxygen sensor, disposed downstream of said catalyst, for sensing concentration of oxygen included in the exhaust gas as an oxygen signal; and said deterioration detecting means detects the degree of deterioration by comparing an air/fuel-ratio variation signal, which

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concerns an air-fuel ratio forcefully varied when the obtained temperature is in the particular temperature range, and the oxygen signal (e.g. See Fig. 9; col. 14, lines 40-58).

Regarding claim 13, Tayama further discloses that the deterioration detecting means includes an upstream linear A/F sensor and a downstream linear A/F sensor, respectively disposed upstream and downstream of said catalyst, each of which is for sensing an air-fuel ratio of the exhaust gas as an A/F signal; and said deterioration detecting means detects the degree of deterioration by comparing the A/F signals, respectively received from said upstream and said downstream linear A/F sensors when the obtained temperature is in the particular temperature range (e.g. See Fig. 9; col. 14, lines 40-58).

Regarding claim 15, Tayama further discloses that the deterioration detecting means includes a linear A/F sensor, disposed downstream of said catalyst, for sensing an air-fuel ratio of the exhaust gas as A/F signal; and said deterioration detecting means detects the degree of deterioration by comparing an air/fuel-ratio variation signal, which concerns an air-fuel ratio forcefully varied when the obtained temperature is in the particular temperature range, and the A/F signal (e.g. See Fig. 9; col. 14, lines 40-58).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

*Claims 3-4 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matros in view of design choice.*

Regarding claims 3-4, and 19, Matros discloses all the claimed limitation as discussed above except that the particular temperature range is not lower than 600 °C nor higher than 800°C.

Regarding the specific range of the catalyst temperature, it is the examiner's position that a range of between 600 °C to 800°C of the catalyst temperature, would have been an obvious matter of design choice well within the level of ordinary skill in the art, depending on variables such as mass flow rate of the exhaust gas, as well as the size of the engine, properties of materials for making the catalyst, and the controlled temperature of the catalytic converter. Moreover, there is nothing in the record which establishes that the claimed parameters present a novel or unexpected result (See *In re Kuhle*, 562 F. 2d 553, 188 USPQ 7 (CCPA 1975)).

Under some circumstances, however, changes such as these may impart patentability to a process if the particular ranges claimed produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art. In *re Dreyfus*, 22 CCPA (Patents) 830, 73 F.2d 931, 24 USPQ 52; In *re Waite et al.*, 35 CCPA (Patents) 1117, 168 F.2d 104, 77 USPQ 586. Such ranges are termed "critical" ranges, and the applicant has the burden of proving such criticality. In *re Swenson et al.*, 30 CCPA (Patents) 809, 132 F.2d 1020, 56 USPQ 372; In *re Scherl*, 33 CCPA (Patents) 1193, 156 F.2d 72, 70 USPQ 204. However, even though applicant's modification results in great improvement and utility over the prior art, it may still not be patentable if the modification was within the capabilities of one skilled in the art. In *re Sola*, 22 CCPA (Patents) 1313, 77 F.2d 627, 25 USPQ 433; In *re Normann et al.*, 32 CCPA (Patents) 1248, 150

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F.2d 627, 66 USPQ 308; In re Irmischer, 32 CCPA (Patents) 1259, 150 F.2d 705, 66 USPQ 314. More particularly, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Swain et al., 33 CCPA (Patents) 1250, 156 F.2d 239, 70 USPQ 412; Minnesota Mining and Mfg. Co. v. Coe, 69 App. D.C. 217, 99 F.2d 986, 38 USPQ 213; Allen et al. v. Coe, 77 App. D.C. 324, 135 F.2d 11, 57 USPQ 136.

### ***Allowable Subject Matter***

Claims 7-8, 10, 12, 14, and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Since allowable subject matter has been indicated, applicant is encouraged to submit formal drawings in response to this Office action. The early submission of formal drawings will permit the Office to review the drawings for acceptability and to resolve any informalities remaining therein before the application is passed to issue. This will avoid possible delays in the issue process.

### ***Prior Art***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of four patents:

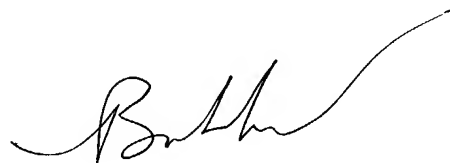
Katayama et al. (Patent Number 6,502,389), Taga et. al. (Patent Number 6374596), Katoh et al. (Patent Number 5661972), and Kakuyama et al. (Patent Number 6622479) all disclose an exhaust gas purification for use with an internal combustion engine.

*Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Binh Tran whose telephone number is (703) 305-0245. The examiner can normally be reached on Monday-Friday from 8:30 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion, can be reach on (703) 308-2623. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0861.



BT  
September 03, 2004

Binh Q. Tran  
Patent Examiner  
Art Unit 3748